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## Home Alone - An Operant Approach to Separation-Related Vocalization and Pacing in a Companion Dog

Pfaller-Sadovsky, N. (2019). *Home Alone - An Operant Approach to Separation-Related Vocalization and Pacing in a Companion Dog*. Poster session presented at Association for Behavior Analysis International, 45th Annual Convention, Chicago, IL, Chicago, United States.

**Document Version:**  
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# Home Alone! An Operant Approach to Separation-Related Behaviour in a Companion Dog: A Data-Based Case Study



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## INTRODUCTION

- Canine separation-related behaviours are frequently encountered by animal behaviourists (Borchelt & Voith, 1982; Takeuchi *et al.*, 2001).
- In the UK alone, it is estimated that more than a million companion dogs display adverse reactions to being left alone (Bradshaw *et al.*, 2002 a, b). Further, an estimated 33% of shelter dogs have been relinquished due to behavioural issues related to separation-induced behaviours (Bailey, 1992; Diesel *et al.*, 2010).
- Separation-related behavioural problems occur only when the dog is separated from the owners and the behaviour is displayed within the first few minutes, or at most within 30 min of the departure of the owner (Blackwell *et al.*, 2006; Voith & Borchelt, 1985).
- Excessive vocalisation (i.e., barking and whining), pacing (i.e., repetitive walking), excessive salivation and panting, inappropriate elimination, and destructiveness during the owner's absence are most commonly cited symptoms (Palestrini *et al.*, 2010). Some dogs may also abstain from eating or drinking during the period of separation (Hothersall & Tuber, 1979).
- Although several studies (e.g., Bennett, 2013; Cottam *et al.*, 2008; Podberscek *et al.*, 1999) investigated the efficacy of interventions, the latter were not continuously monitored (i.e., measurement), and improvement was measured using owner questionnaires (Butler *et al.*, 2011).
- This case study used a combination of operant approaches (i.e., differential reinforcement) and counterconditioning to treat separation-related behaviours in an adolescent female companion dog. With the help of the owners, progress was monitored by continuous data collection throughout the intervention.

### Statement of the problem

- A dog was presented because of excessive vocalisations and pacing when left alone in the owners apartment. At their return, the dog also engaged in excessive drinking.

### Signalment

- The dog, "Lucy", was a medium-sized, 7-month-old intact female mixture-breed, weighing approx. 20 kg.

## METHOD

### Intervention

- The intervention was a training package comprising following general components:
- Teaching a solid settle response on a preferred mat on cue.
- Differentially reinforcing a calm settle response over successively longer durations (i.e., seven steps – see Table 2).
- Counterconditioning using a stuffed Kong® toy was introduced at session 65 and was variably provided up to session 74 at the owners' discretion.
- Table 2 displays the task analysis of the settle response.

### Design

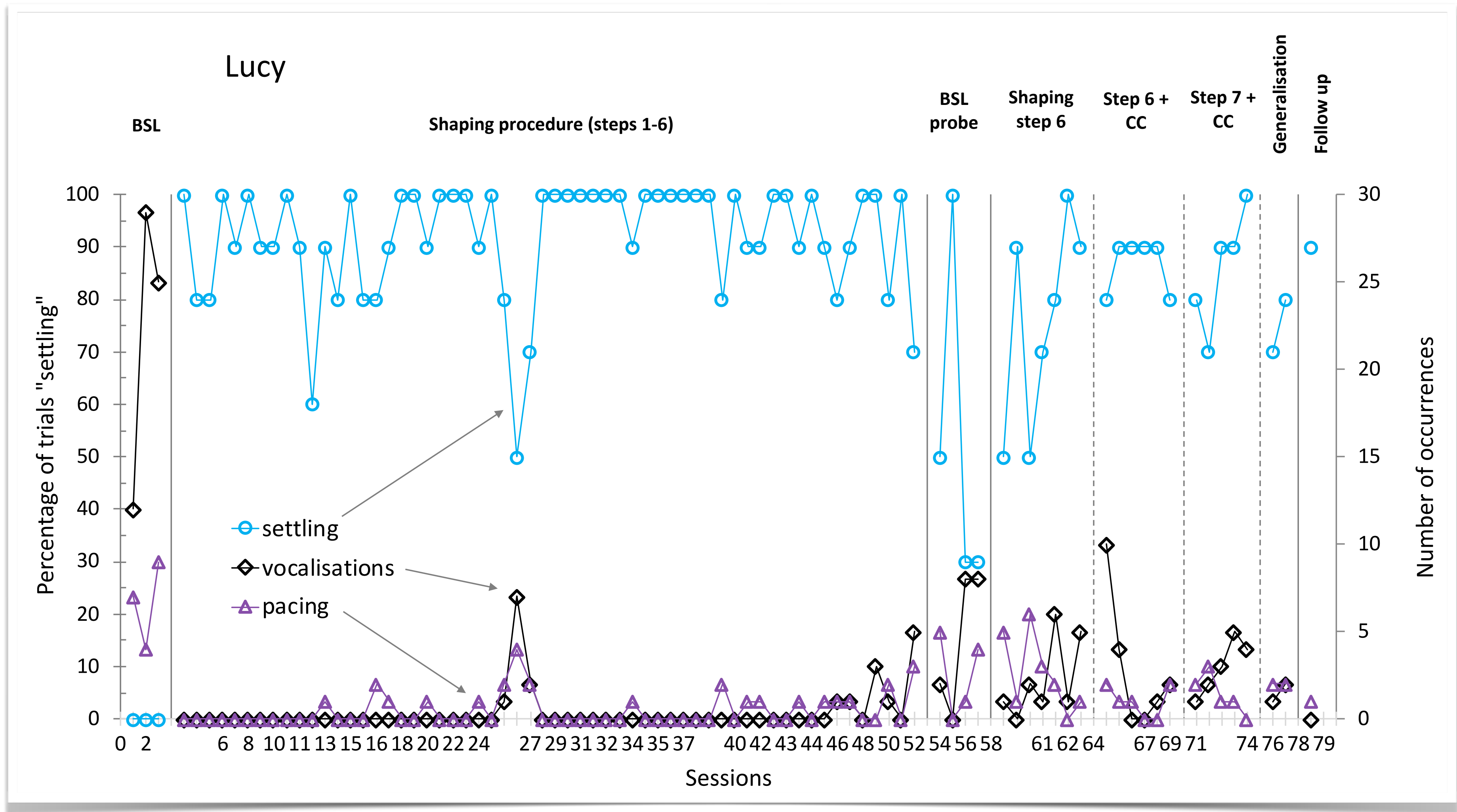
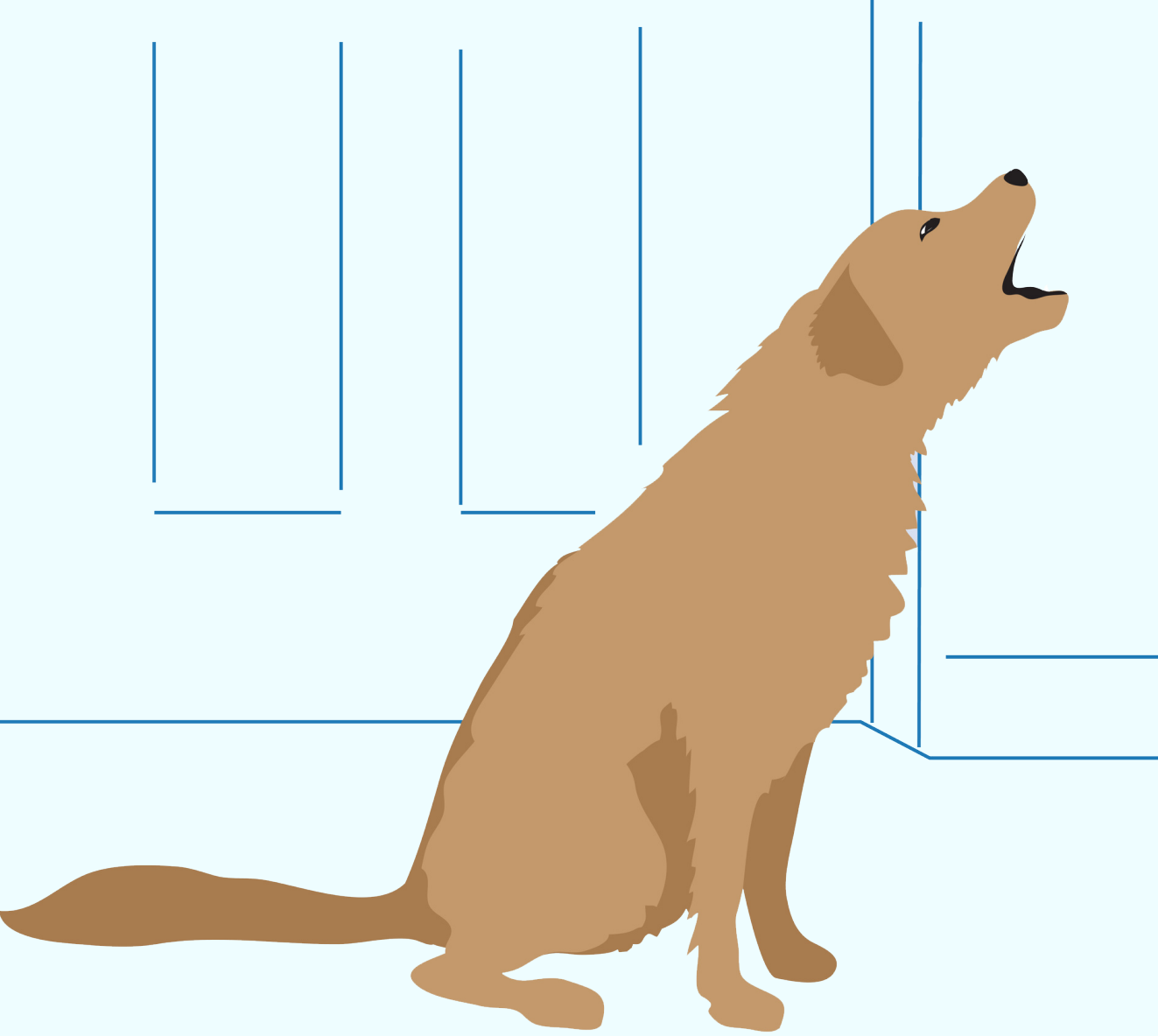
- A modification of an ABA design was used for data analysis. Table 3 displays the definitions of successful and unsuccessful trials.
- Baseline: for ethical reasons, baseline sessions were limited to the absolute necessary. Hence, three 3 min baseline sessions were conducted. The owner was told "do as you have previously done" which included preparing keys and other items (e.g., purse), putting on shoes and leaving the apartment for three minutes without paying attention to the dog. Data were collected on occurrences of settling, vocalisations and pacing.
- Intervention phases: these included shaping steps 1-6 (i.e., phase B) as outlined in Table 2, a phase comprising step 6 only (i.e., phase D), step 6 plus counterconditioning (i.e., phase E), and step 7 plus counterconditioning (i.e., phase F). The mat which was used initially to train the settle response was started to be faded-out during step 5.
- Baseline probe: phase B was followed by a baseline probe, i.e., the intervention was briefly withdrawn (i.e., sessions 53 to 57). Baseline probe sessions were the same as baseline sessions.
- Generalisation: to test whether the acquired skills generalised across longer than trained periods of time, two generalisation probes were conducted (i.e., sessions 76 and 77 with CC). These were done in the same way as the sessions during phase E, however, durations of separation were longer. Namely, 15 min and 20 min for session 76 and 77, respectively.
- Follow up: five weeks after the last generalisation probe, a follow-up probe session was conducted. This session was the same as the previous, however, separation duration was increased to 30 min. During the weeks prior to the follow-up appointment owners commenced with rehearsal of phase E at their own discretion.

## HISTORY

- The dog lived with a young couple in their early 20s. The female owner was enrolled in a College undergraduate course and spent as much time as possible at home or took Lucy with her. The male owner had the opportunity to take Lucy with him to work which was done once a week. If none of the options were possible, Lucy spent the day with one of the owners' parents.
- At the time of presentation, Lucy had been living with the owners for about two months. According to the owners, Lucy had been rescued by an Austrian Animal Welfare Organization from a pound in Slovakia and spent the first two months in Austria in a group of approx. 20 dogs. The group of dogs could seek shelter in an abandoned house and had a large outdoor area to explore and exercise. Although the owner of the property spent some hours with the dogs, they were mostly unsupervised and left alone during the nights.
- Within days after adoption, Lucy started to show "hyper-attachment" (i.e., following the owner everywhere when home and seeking constant physical contact - Sherman & Mills, 2008) towards both owners and engaged in excessive vocalizations and pacing when left alone even for very brief periods of time (e.g., < 3 min).
- The female owner participated with Lucy in a positive reinforcement-based training class (e.g., clicker training), and Lucy was walked at least twice a day around the neighborhood using a well-fitted harness, leash and treats. According to the owners, Lucy was very well socialized with humans and dogs, showing friendly interest and calm greeting behaviour (e.g., approaching with loose movements, sniffing, sometimes licking of hands, tolerating petting) but no jumping-up or other overly excited behaviours were reported. This was confirmed during the animal behaviourists' first home visit.
- Prior to contacting the behaviourist, the owners tried to treat the undesired behaviours by repeatedly exposing the dog to short amounts of separation (i.e., 3 – 5 min). At the initial consultation, the owners stated that they did not see any improvement, however.

## UNDESIED BEHAVIOURS & MEDICAL INFORMATION

- Table 1 displays topographical definitions of the dog's undesired behaviours.
- During the initial consultation, it became obvious that Lucy did not have a reliable "settle" response in her repertoire.
- A CBC and serum biochemical analysis, as well as screening for hormonal imbalances (i.e., thyroid) have been performed by a veterinary practitioner one week after initial consultation. No abnormalities were detected. Psychotropic medication was discussed but not administered.



**Figure 1.** The left y-axis displays percentage of trails for the settle response, while the left y-axis shows the number of vocalizations and pacing. The generalisation probes were conducted 14 days after training ended. Follow-up probe was conducted 40 days after the last generalisation probe. Note. CC = counterconditioning

**Table 1.** Topographical definitions of the dog's separation-related behaviours.

Term	Definition
<b>Vocalisations</b>	
Whining	Short, cyclic, high-pitched tonal calls that differ in volume (Farago <i>et al.</i> , 2014)
Isolation-related barking	Vocalisation that are high in fundamental frequency & tonality with low pulse (Pongracz <i>et al.</i> , 2017)
Howling	Vocalisations that are harmonic & frequency-modulated (Taylor <i>et al.</i> , 2014)
Pacing	Walking about the living space for > 5 sec, can be accompanied by panting & salivating

**Table 2.** Task analysis of teaching the settle response.

Number of Steps	Definitions
1.	Down on mat while owner walks about the room (3-120 sec)
2.	Down on mat while owner walks outside the room (3-120 sec)
3.	Down on mat while owner out of sight (3-120 sec)
4.	Down on mat while owner out of sight, departure cues & front door (3-30 sec)
5.	Down on (fading) mat while owner out of sight, departure cues & front door (5-90 sec)
6.	Down on mat (fading) while owner out of sight, departure cues & front door (90-180 sec)
7.	Down (mat faded) while owner out of sight, departure cues & front door (> 180 sec)

**Table 3.** Definitions of successful and unsuccessful trials.

Steps	Definitions	
	Successful trails	Unsuccessful trails
Steps 1 to 5	Going to the mat when the discriminative stimulus (i.e., cue - "go settle") was presented & laying down (latency < 3 sec) for the specified amount of time.	Getting up & leaving the mat before the specified amount of time has passed & displaying any other behaviours after the cue was delivered (e.g., whining or barking)
Steps 6 and 7	When the discriminative stimulus (i.e., cue - "go settle") was presented, the dog was laying down (latency < 3 sec) on the allocated spot (no mat).	Engaging in any of the undesired behaviours as specified in Table 1.

## RESULTS & DISCUSSION

- Figure 1 displays data of Lucy's progression during baseline (i.e., phase A), intervention phases (i.e., B, D, E and F), and generalisation and follow up.
- Teaching dogs a calm and solid settle response is a valuable skill that can be a helpful component of behavioural intervention packages (Overall, 2017; Voith, 1982).
- Access to owners contingent on or adventitiously after undesired behaviours occurred may contribute to development and maintenance of problematic behaviours (Feurbacher & Wynne, 2016).
- Separation from the owner no longer functioned as the EO for separation-induced behaviour. The departure cue has become a discriminative stimulus for settling down.
- Variables that may have benefitted the successful outcomes were (a) the dog was adolescent; (b) by using shaping, the owners and the do contacted reinforcement early in the process (i.e., appropriate behaviour by the dog and feedback by the behaviourist); (c) continuous measurement and frequent live meetings via Skype®.

## DIFFERENTIALS

- Hyper-attachment: lack of exercise and/or stimulation, elimination needs not met, anxiety (e.g., noises)
- Vocalizations: physical pain, lack of stimulation, stereotypic behaviour, anxiety (e.g., noises)
- Pacing: inadequate exercise, stereotypic behaviour, anxiety (e.g., noises), general stress response
- Based on video and in-person assessments of the dog, as well as information provided by the owners, the above differentials could not be confirmed and separation anxiety was a likely diagnosis.

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